



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

MAR 29 2013

CERTIFIED MAIL 7012 1010 0001 8097 4403
RETURN RECEIPT REQUESTED

Mr. Charles H. Haake
Gibson, Dunn & Crutcher LLP
1050 Connecticut Avenue, N.W.
Washington, DC 20036-5306

Re: Administrative Compliance Order on Consent
Docket No. CWA-04-2013-5759

Dear Mr. Haake:

Enclosed please find an executed copy of the above-referenced Administrative Compliance Order on Consent (AOC) Docket No. CWA-04-2013-5759. This AOC requires the restoration of approximately 85 acres of impacted wetlands in accordance with the June 2012 wetland restoration plan submitted by Barry Vittor and Associates, Inc. The U.S. Environmental Protection Agency, Region 4 has retained the original copy for our enforcement files.

Thank you for you and your client's cooperation in this matter. If you have any questions regarding this AOC, please contact Mr. Philip Mancusi-Ungaro, Associate Regional Counsel, at (404) 562-9519 or Mr. Mike Wylie, of my staff, at (404) 562-9409.

Sincerely,

A handwritten signature in blue ink, appearing to read "J. Giattina".

James D. Giattina
Director
Water Protection Division

Enclosures

cc: See attached list

Mailing List

Mr. Don Mroczko
U.S. Army Corps of Engineers, Mobile

Ms. Trudy Fisher
Mississippi Department of Environmental Quality, Jackson

Ms. Lisa Ouzts
Mississippi Department of Environmental Quality, Jackson

Ms. Teri T. Wyly
Balch & Bingham LLP

Mr. Jan Boyd
MS Department of Marine Resources

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4**

IN THE MATTER OF:

HANCOCK COUNTY LAND, LLC

RESPONDENT.

)
) ADMINISTRATIVE
) COMPLIANCE ORDER ON CONSENT
)
) Docket No.: CWA-04-2013-5759
)
)
)

I. Statutory Authority

1. Section 309(a) of the Clean Water Act ("CWA"), 33 U.S.C. § 1319(a), provides that, whenever the U.S. Environmental Protection Agency ("EPA") finds that any person is in violation of any condition or limitation which implements, inter alia, Sections 301 and 404 of the CWA, 33 U.S.C. §§ 1311 and 1344, the EPA may issue an order requiring such person to comply with such condition or limitation, and shall specify a time for compliance that the EPA determines to be reasonable.

2. The following Findings of Fact and Determinations of Law are made and this Administrative Compliance Order on Consent ("AOC") is issued pursuant to the authority vested in EPA by Section 309(a) of the CWA, 33 U.S.C. § 1319(a), as amended. The authority to issue this AOC has been delegated from the Administrator of the EPA to the Regional Administrator of the EPA, Region 4. The Regional Administrator has further delegated this authority to the Director of the Water Protection Division, EPA, Region 4.

II. EPA Findings of Fact and Determinations of Law

Upon Consent of the parties by their attorneys and authorized officials and solely for purposes of this proceeding and to resolve this dispute and to avoid the uncertainties and expenses attendant to litigation and without admitting any liability or guilt with respect thereto or otherwise, Respondent admits the jurisdictional allegations contained in this AOC, but neither admits nor denies the factual allegations, assertions, conclusions (other than jurisdictional conclusions), or findings set forth herein, and the Director hereby finds:

3. This AOC pertains to the deposition of dredged and/or fill material into jurisdictional waters of the United States. Specifically, the deposition occurred in approximately 115 acres of forested wetlands that are adjacent to unnamed tributaries of Bayou L' Enciente, Bayou Marone and Bayou La Croix ("Discharge Area"). These named tributaries confluence with the Jourdan River which flows to St. Louis Bay, both navigable waters of the United States. The site is located on the northwest and southwest side of the intersection of Interstate 10 and Mississippi State Highways 603/43, north of Waveland, in Hancock County, Mississippi ("Site"). The approximately 1700 acre Site is divided by Interstate 10 into a North tract

(approximately 1000 acres) and a South tract (approximately 700 acres). The approximate centers of both tracts are: North tract at 30° 21' 38" north latitude and 89° 26' 38" west longitude and the South tract at 30° 20' 50" north latitude and 89° 26' 15" west longitude (See Exhibits A and B).

4. EPA asserts that the following facts are true and substantiated:

a. The Mobile District Army Corps of Engineers ("Corps") conducted investigations on the Site on October 3 and 18, 2007. During the investigations, the Corps found what it believed to be unpermitted dredged and fill material discharged on many acres of waters of the United States.

b. On November 2, 2007, the COE issued a Notice of Violation to Hancock County Land, LLC, one of the owners of the property on which the alleged unauthorized work was conducted.

c. The EPA, along with the Corps, the Mississippi Department of Marine Resources and representatives of the Respondent, conducted a Site inspection on November 8, 2007. The EPA also found what it believed to be discharges of dredged and/or fill material into wetlands on the Site during the inspection.

d. The EPA issued a CWA, section 308 information request to the Hancock County Land, LLC and Stennis Land, LLC on January 10, 2008.

e. The EPA conducted additional on and off-site work and information gathering during three weeks in April 2010.

f. Respondent, after reaching a settlement in the Gulf Restoration Network v. Hancock County Development LLC, et al., United States District Court for the Southern District of Mississippi, Case No.: 1:08cv186, is currently implementing an Ecologic Restoration Plan on portions of an approximately 230 acre section on the west side of the South tract (Exhibit C).

5. Hancock County Land, LLC is a person within the definition set forth under Section 502(5) of the CWA, 33 U.S. C. § 1362(5).

6. Hancock County Land, LLC (Respondent), at all times relevant to this AOC, was an owner and/or operator of the Site that contained the Discharge Areas.

7. Section 301(a) of the CWA, 33 U.S.C. § 1311(a), prohibits the discharge of pollutants by any person into waters of the United States except in compliance with a permit issued under, inter alia, Section 404 of the CWA, 33 U.S. C. § 1344.

8. Commencing on or before October 3, 2007, Respondent, and/or those acting on behalf of the Respondent, discharged dredged and/or fill material into tributaries and wetlands on the Site using earthmoving machinery. Currently, the unauthorized dredged and/or fill material discharged by the Respondent remains in areas which the Director has concluded constitute waters of the United States.

9. Respondent's unauthorized activities impacted approximately 115 acres of land which the Director has concluded contain forested wetlands that are adjacent to three unnamed tributaries of Bayou L' Enciente, Bayou Marone and Bayou La Croix, all which flow into the Jourdan River, a navigable water of the United States.

10. The discharged dredged and/or fill material, including earthen material deposited at the Discharge Areas, are "pollutants" as defined under the CWA Section 502(6), 33 U.S.C. § 1362(6).

11. The mechanized earth moving machinery employed by the Respondent to deposit the dredged and/or fill material at the Discharge Areas are "point sources" as defined under the CWA Section 502(14), 33 U.S.C. § 1362(14).

12. A "discharge of a pollutant", as defined at Section 502(12)(A) of the CWA, 33 U.S. C. § 1362(12)(A), is any addition of any pollutant to navigable waters from any point source.

13. Respondent's placement of the dredged and/or fill material at the Discharge Areas constitutes a "discharge of pollutants" as defined under the CWA Section 502(12), 33 U.S. C. § 1362(12).

14. The term "navigable waters" as defined in Section 502(7) of the CWA, 33 U.S.C. § 1362(7), means the waters of the United States, including the territorial seas.

15. The Discharge Areas include "navigable waters" as that term is defined in Section 502(7) of the CWA, 33 U.S.C. § 1362(7).

16. At no time during the discharge of dredged and/or fill material into jurisdictional waters of the United States on or before October 3, 2007, did the Respondent possess a permit under Section 404 of the CWA, 33 U.S.C. § 1344, authorizing such activities performed in wetlands by Respondent. Each discharge by the Respondent of pollutants into navigable waters without the required permit issued under Section 404 of the CWA, 33 U.S.C. § 1344, is a violation of Section 301(a) of the CWA, 33 U.S. C. § 1311(a).

17. Each day the material discharged by the Respondent remains in waters of the United States without the required permit under Section 404 of the CWA, 33 U.S.C. § 1344, constitutes a day of violation of Section 301 of the CWA, 33 U.S. C. § 1311.

18. Therefore, Respondent has violated Section 301 of the CWA, 33 U.S.C. § 1311, by discharging pollutants into navigable waters without a permit.

III. ORDER ON CONSENT

Based on the foregoing **FINDINGS** and pursuant to the authority of Section 309(a) of the CWA, (33 U.S.C. §1319(a)), IT IS HEREBY ORDERED AND AGREED TO:

19. Respondent shall perform the following actions:

ON-SITE RESTORATION

i. The on-site restoration measures described in this paragraph 19 shall apply only to those portions of the Site that are owned by Respondent or by Stennis Land, LLC (the "Restoration Property"). A map indicating the approximate borders of the Restoration Property is attached hereto as Exhibit D.

ii. Within 30 days after receipt of a signed AOC, Respondent shall apply for, or shall cause to be applied for, any and all any city, county, state and/or federal permits or authorizations necessary for the implementation of the Barry A. Vittor and Associates' Site Restoration Plan (the "Restoration Plan"), which is attached hereto as Exhibit E. Within 30 days of the receipt by Respondent of all such necessary permits and authorizations, Respondent shall begin implementation the Restoration Plan. All Site restoration measures, excluding forested wetland replanting, shall be completed within twelve months of initial restoration commencement, unless otherwise agreed in writing by the parties hereto. Forested wetland replanting shall commence in the first vegetative dormant season following Site restoration.

iii. Respondent shall inspect, or cause to be inspected, the Restoration Area annually for five years after completion of on-site restoration to determine the success of the restoration activities. Respondent shall submit an Annual Inspection Report to the EPA by December 1st of each year of annual monitoring that includes, but is not limited to:

- a. The date of the annual inspection;
- b. Color photographs from the inspection locations;
- c. An estimate of the number of surviving wetland vegetative species (including volunteer species); and,
- d. The number of wetland vegetative species replanted (if required) to reach the success criterion established in the Vittor and Associates Restoration Plan.

iv. The EPA will review submitted annual reports and will either approve them or provide comments. Respondent shall address any comments provided by the EPA within 45 days of receipt. In the event of any disagreement, the EPA will consider the Respondent's position and make a final determination.

v. Respondent is not required to seek an after-the-fact permit for any dredge and fill activity alleged in this AOC.

20. If the Site, or any part of the Site, described in this AOC is transferred prior to completion of the requirements of this AOC, such transfer will not absolve the Respondent from

the responsibility of implementing and completing the obligations under this AOC or insuring that these requirements have been met, unless approved in writing by the EPA. Completion of the requirements of this AOC will remain the responsibility of the Respondent, unless approved in writing by the EPA.

22. Any documentation required to be submitted in this AOC shall be mailed to the following address:

Mike Wylie
U.S. Environmental Protection Agency
Atlanta Federal Center/Region 4
Wetlands Enforcement Section 15th Floor
61 Forsyth Street, S.W.
Atlanta, GA 30303

IV. GENERAL PROVISIONS

23. The provisions of this AOC shall apply to and be binding upon the Respondent, its agents, servants, employees, successors, and assigns.

24. If the Site is transferred prior to completion of the requirements of this AOC, such transfer will not absolve the Respondent from the responsibility of implementing and completing the obligations under this AOC or insuring that these requirements have been met. Completion of the requirements of this AOC will remain the responsibility of the Respondent, unless otherwise approved in writing by the parties hereto.

25. This AOC is not and shall not be construed to be a permit under the CWA or its implementing regulations. This AOC does not exempt the Respondent from compliance with, or the requirements to obtain, any city, county, or state permits or authorizations before proceeding with the restoration activities.

26. Respondent acknowledges the jurisdiction of the EPA to issue this AOC.

27. Respondent waives any and all claims for relief and otherwise available rights or remedies to judicial or administrative review which the Respondent may have with respect to any issue of fact or law set forth in this AOC, including, but not limited to, any right of judicial review of this AOC under the Administrative Procedure Act 5 U.S.C. §§ 701-706.

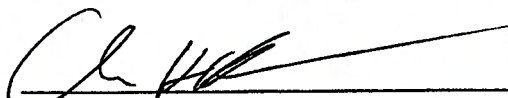
28. This AOC does not constitute a waiver, suspension, or modification of the terms and conditions of the CWA or its implementing regulations. Issuance of or compliance with this AOC does not relieve the Respondent from responsibility to comply with all requirements of the CWA, its implementing regulations, and any legal order issued under the CWA or its regulations.

29. Issuance of this AOC shall not be deemed an election by the EPA to forego any Administrative, Civil, or Criminal action to seek penalties, fines, or other appropriate relief under the CWA for the violations set forth in the Findings.

30. Failure to comply with the terms of this AOC may result in your liability for statutory civil penalties under Section 309(d) of the Act, 33 U.S.C. § 1319(d), as modified by 40 C.F.R. Part 19. Should the EPA commence an action seeking penalties for violations of this AOC, a United States District Court may impose civil penalties if the court determines that Respondent has violated the CWA and failed to comply with the terms of the AOC.

31. Respondent reserves the right to contest liability in any subsequent action filed by the EPA to seek penalties for violation of this AOC, and reserves the right to contest liability and/or to contest any issue of fact or law set forth in this AOC in any subsequent action filed by the EPA and/or the United States for any violations alleged in the Findings, above.

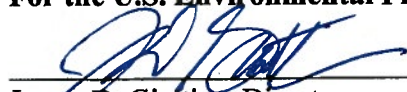
Hancock County Land, LLC



Charles H. Haake, Esquire
Agent for Respondent

Date: 3-25-13

For the U.S. Environmental Protection Agency



James D. Giattina, Director
Water Protection Division
U.S. Environmental Protection Agency

Date: 3/28/13

NOTICE OF SECURITIES AND EXCHANGE COMMISSION REGISTRANTS' DUTY TO DISCLOSE ENVIRONMENTAL LEGAL PROCEEDINGS

Securities and Exchange Commission regulations require companies registered with the SEC (e.g., publicly traded companies) to disclose, on at least a quarterly basis, the existence of certain administrative or judicial proceedings taken against them arising under Federal, State or local provisions that have the primary purpose of protecting the environment. Instruction 5 to Item 103 of the SEC's Regulation S-K (17 CFR 229.103) requires disclosure of these environmental legal proceedings. For those SEC registrants that use the SEC's "small business issuer" reporting system, Instructions 1-4 to Item 103 of the SEC's Regulation S-B (17 CFR 228.103) requires disclosure of these environmental legal proceedings.

If you are an SEC registrant, you have a duty to disclose the existence of pending or known to be contemplated environmental legal proceedings that meet any of the following criteria (17 CFR 229.103(5)(A)-(C)):

- A. Such proceeding is material to the business or financial condition of the registrant;
- B. Such proceeding involves primarily a claim for damages, or involves potential monetary sanctions, capital expenditures, deferred charges or charges to income and the amount involved, exclusive of interest and costs, exceeds 10 percent of the current assets of the registrant and its subsidiaries on a consolidated basis; or
- C. A governmental authority is a party to such proceeding and such proceeding involves potential monetary sanctions, unless the registrant reasonably believes that such proceeding will result in no monetary sanctions, or in monetary sanctions, exclusive of interest and costs, of less than \$100,000; provided, however, that such proceedings which are similar in nature may be grouped and described generically.

Specific information regarding the environmental legal proceedings that must be disclosed is set forth in Item 103 of Regulation S-K or, for registrants using the "small business issuer" reporting system, Item 103(a)-(b) of Regulation S-B. If disclosure is required, it must briefly describe the proceeding, "including the name of the court or agency in which the proceedings are pending, the date instituted, the principal parties thereto, a description of the factual basis alleged to underlie the proceedings and the relief sought."

You have been identified as a party to an environmental legal proceeding to which the United States government is, or was, a party. If you are an SEC registrant, this environmental legal proceeding may trigger, or may already have triggered, the disclosure obligation under the SEC regulations described above.

This notice is being provided to inform you of SEC registrants' duty to disclose any relevant environmental legal proceedings to the SEC. This notice does not create, modify or interpret any existing legal obligations, it is not intended to be an exhaustive description of the legally applicable requirements and it is not a substitute for regulations published in the Code of Federal Regulations. This notice has been issued to you for information purposes only. No determination of the applicability of this reporting requirement to your company has been made by any governmental entity. You should seek competent counsel in determining the applicability of these and other SEC requirements to the environmental legal proceeding at issue, as well as any other proceedings known to be contemplated by governmental authorities.

If you have any questions about the SEC's environmental disclosure requirements, please contact the Office of Chief Counsel in the SEC's Division of Corporation Finance. The phone number is (202) 942-2900.

Exhibit A – North Tract

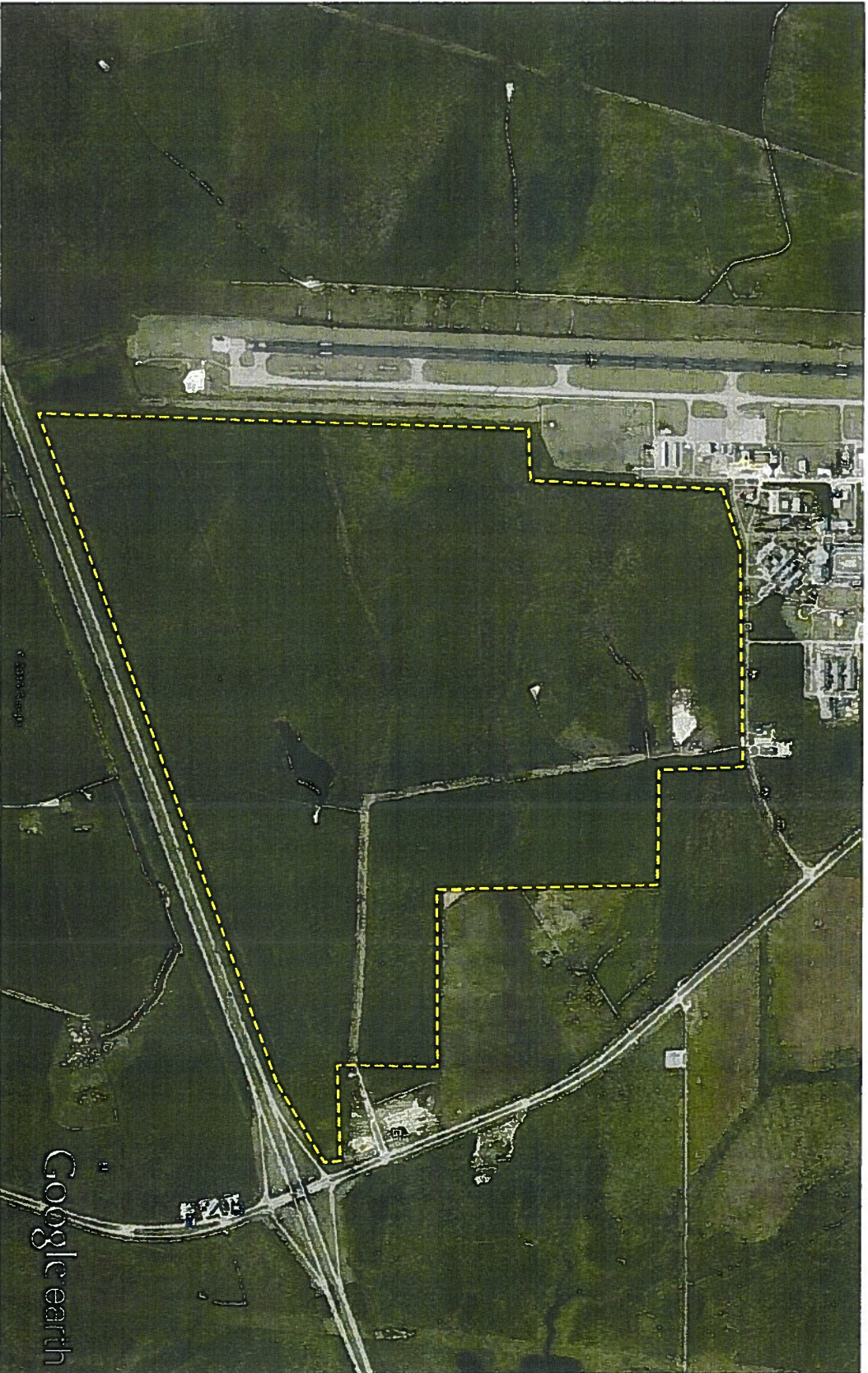


Exhibit B – South Tract

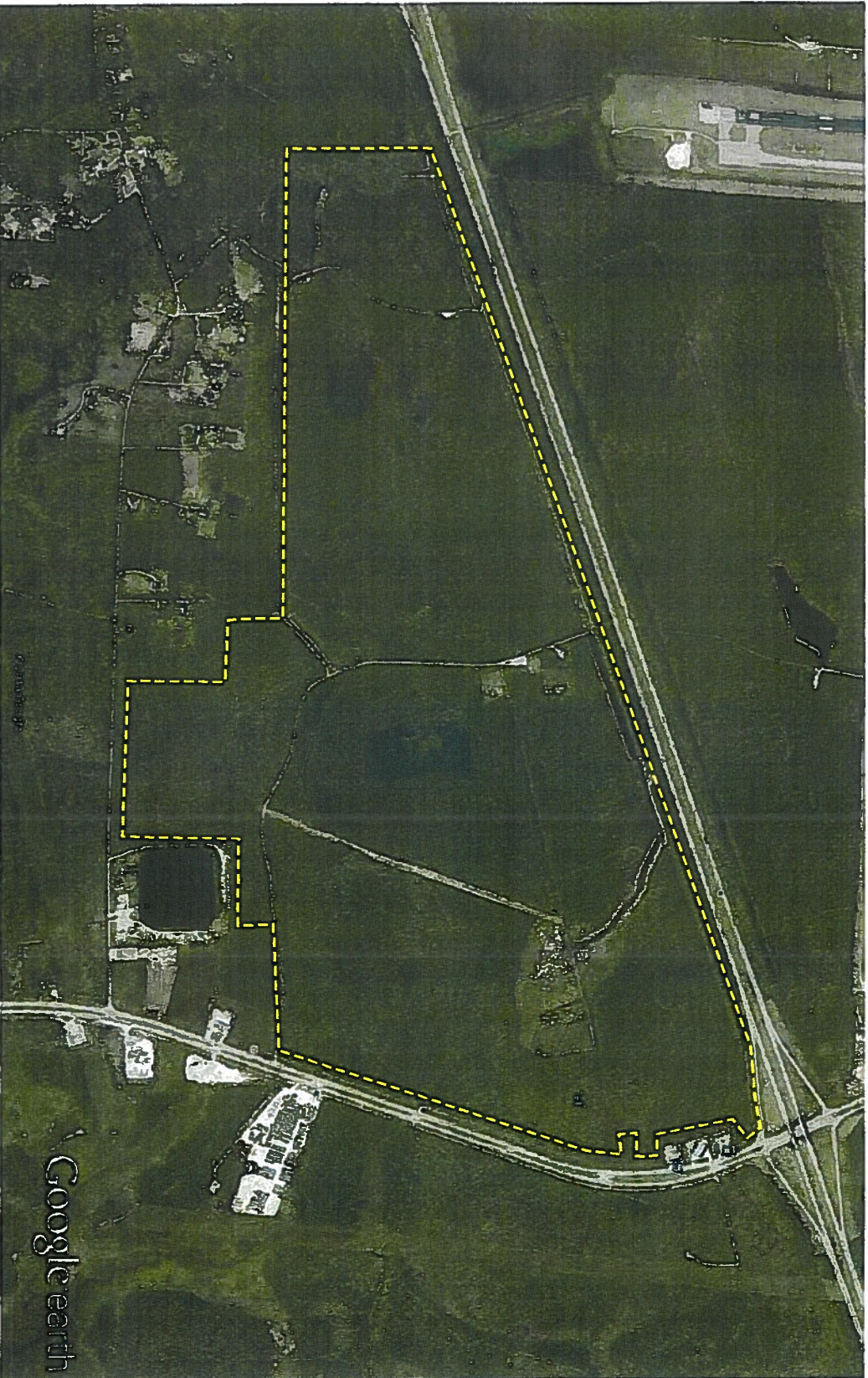
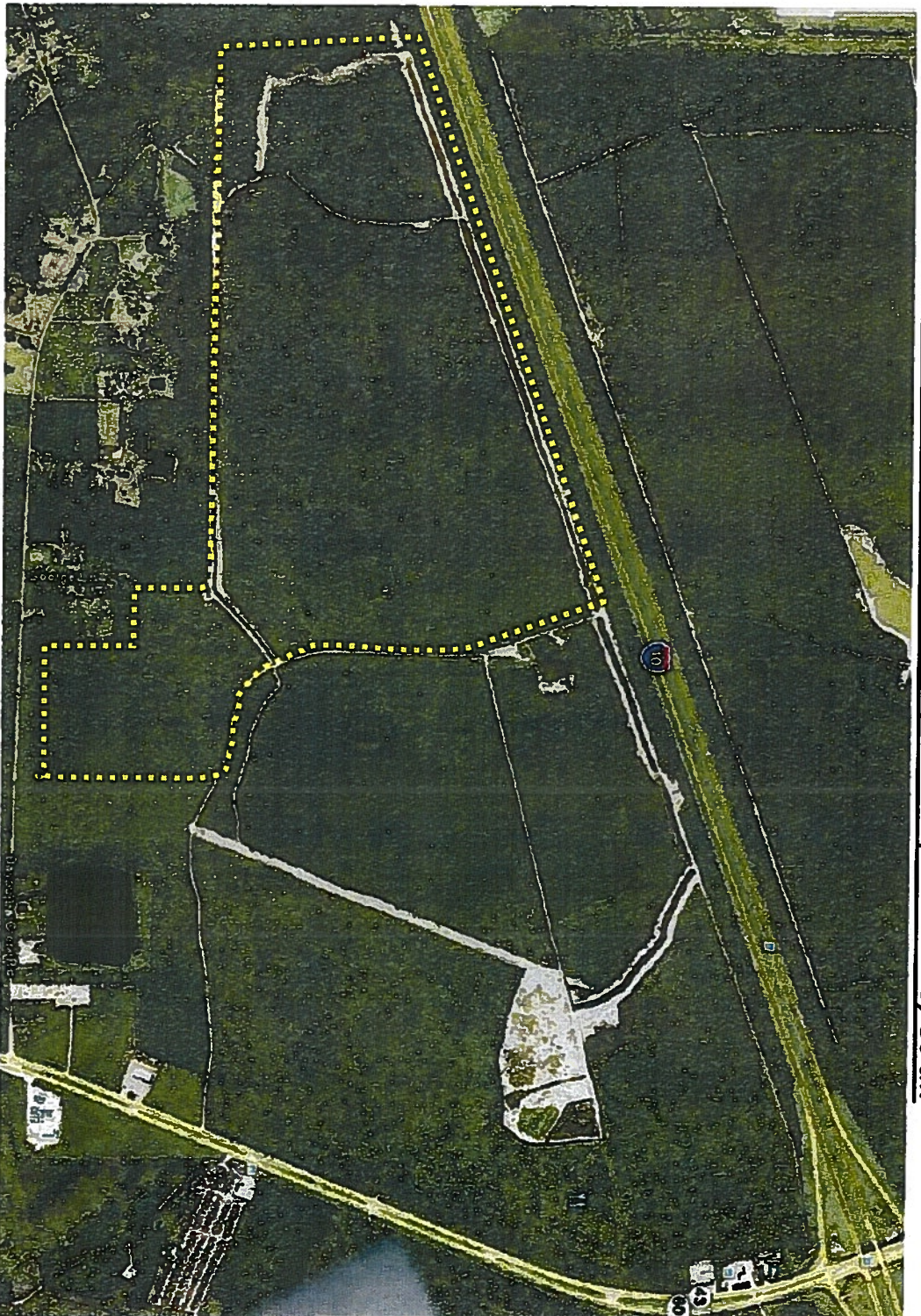
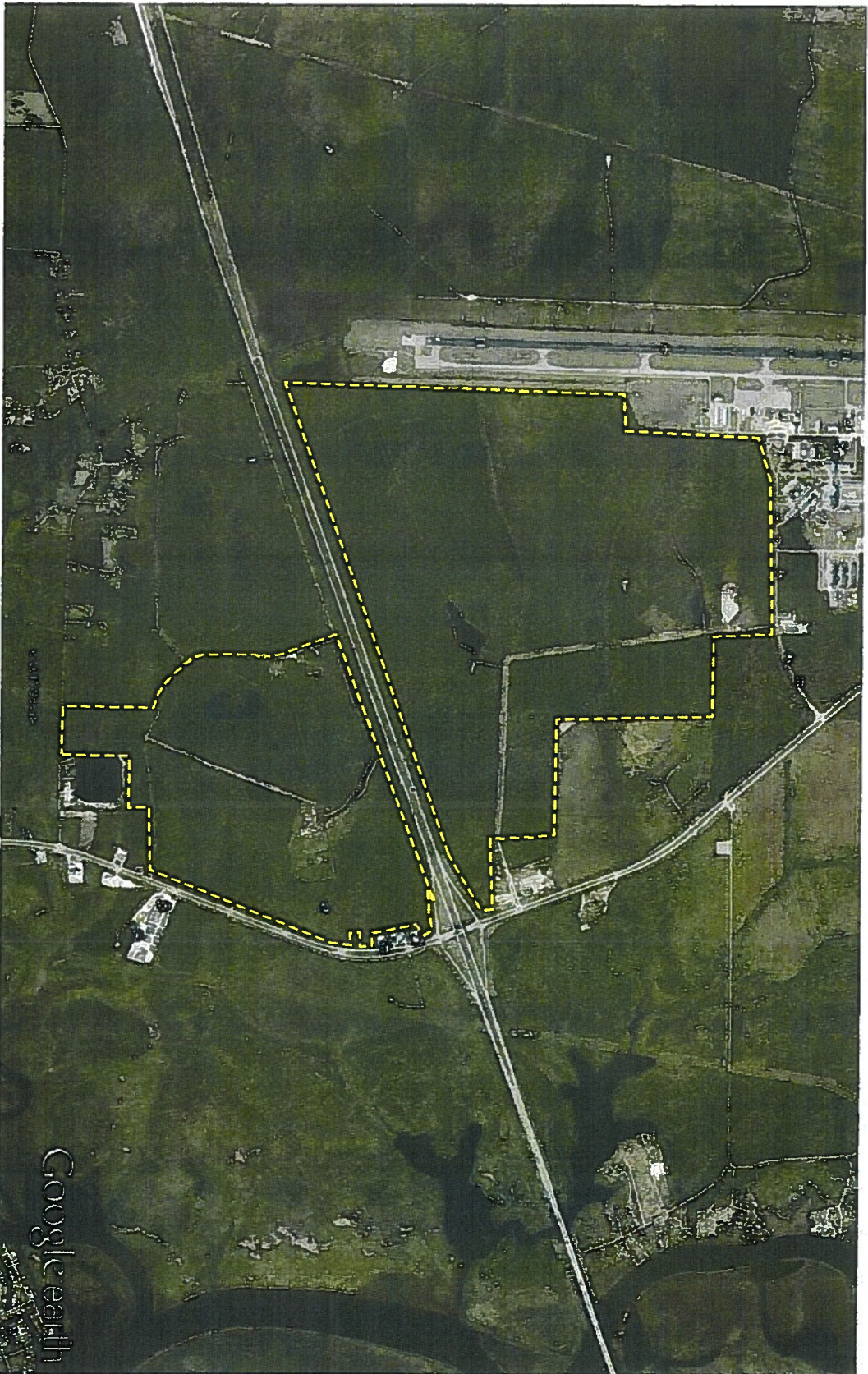


Exhibit C – Parcel Subject to Restoration under Gulf Restoration
Network v. Hancock County Development LLC, et al.



- Parcel dedicated to the Land Trust for the Mississippi Coastal Plain

Exhibit D – The Restoration Property



 - Restoration Property

**WETLAND RESTORATION PLAN FOR
TWO PROPERTIES IN HANCOCK COUNTY, MISSISSIPPI
SAM-2007-1762-CRO
SAM-2007-1792-CRO**

Prepared for

**STENNIS LAND, LLC
P.O. BOX 91206
MOBILE, ALABAMA 36691-1206**

Prepared by

**BARRY A. VITTOR & ASSOCIATES, INC.
8060 COTTAGE HILL ROAD
MOBILE, ALABAMA**

June 2012

INTRODUCTION

The U.S. Army Corps of Engineers (USACE) issued notices of violation to Stennis Lands, LLC (Stennis) and Hancock County Land, LLC (Hancock County) in October, 2007 in regard to mechanized land clearing, regrading, and/or excavation that appeared to have been conducted in wetlands in Hancock County, Mississippi. The two properties are shown in Figure 1. The extent of wetland impacts was estimated separately by Barry A. Vittor & Associates, Inc. and by the US EPA through mapping of wetland boundaries in areas altered by those activities, and comparison of current conditions with previous conditions determined by analysis of pre-2005 aerial imagery. The resulting estimates of impact acreage are generally similar, although the US EPA mapping did not represent some areas of historic ditching/filling and defined as wetlands some areas (*eg.*, the borrow site) that Vittor & Associate reported as mainly upland. Stennis has opted to take a proactive approach by reestablishing site conditions that were present prior to 2005. This restoration plan has been prepared to describe how restoration of the affected areas would be accomplished. The plan does not include a 200-acre area in the west end of the Hancock County Land, LLC property; that area has been deeded to the Land Trust for the Mississippi Coastal Plain, and is to be restored independently of the remaining lands.

TYPES OF WETLAND IMPACTS

Many of the wetlands in the Stennis and Hancock County properties were found to have been disturbed by historic uses of those sites, including excavation of ditches, construction of roads, bedding for pine plantations, and filling for gas well and cell tower service pads. Some areas were altered by previous use as logging staging yards and other timber management operations. Maps of these areas were prepared by Vittor & Associates but did not distinguish between areas of apparent wetland clearing and/or fill and areas of wetland excavation; impacts in previously disturbed wetlands were mapped separately from areas of wetlands that had not been altered prior to 1997 (Figures 2 and 3).

Cleared areas were seeded for erosion control, and a very good cover of grasses has been established. To ensure that surface waters were not degraded by runoff, silt fences were installed around all disturbed areas. Additional disking and seeding was not performed due to work stoppage in response to the wetland violation notice from the USACE. Seeding of non-wetland

RESTORATION APPROACH

The restoration approach described below is intended to be applied to most of the disturbed wetlands in the two properties. However, the owners may pursue after-the-fact permits for some areas of impact, such as important access roads. Those potentially excluded impact areas would be identified prior to initiation of restoration activities, and would be coordinated with USEPA and the Corps of Engineers.

Key Restoration Parameters

Freshwater wetlands such as the flat pinewoods present in these properties are particularly sensitive to parameters such as hydroperiod, land elevation and substrate type. Other habitat variables that affect these wetlands include landscape position/relative to drainage patterns), flood frequency, and changes in degree of inundation. Vittor & Associates coordinated the preparation of a guidebook for wetland restoration in 1996, for the U.S. Army Corps of Engineers, Waterways Experiment Station. Table 5D-5 from that book is included here to summarize key parameters that should be considered in restoring pine-dominated and other freshwater wetlands.

Site Preparation

The Southwest and Northwest quadrant properties are relatively flat, with few defined drainageways, and silt fencing has been effective in preventing sediment transport into surface waters. Consequently, altered land elevation and hydroperiod/hydrology in wetlands are amenable to restoration measures that simply reestablish pre-impact grades. Throughout the site preparation effort, best management practices will be implemented. This includes stopping earthwork during storm events; minimizing heavy equipment damage in undisturbed vegetated areas; use of mats as necessary to minimize rutting in soft soils; and installation of silt fencing.

Thousands of linear feet of silt fencing remain on the property under prior Corps instructions. The placement of much of that fencing is not necessary to prevent run-off from the restoration

areas. Existing silt fencing that is inside the areas to be restored would be removed prior to commencing earthwork. If any existing silt fencing is found to be serviceable and properly placed it may be used with the approval of the Project Manager. New silt fencing will be installed where necessary to prevent sedimentation in adjoining undisturbed habitats during site preparation earthwork.

Soils across the properties are characterized by a thin topsoil layer with sandy loam or loamy sand subsoils. As a result, replacement of wetland soils in excavated sites can be performed with only minimal attention to soil layering; however, some organic topsoil should be spread across the surface of the restored areas, to facilitate vegetation re-growth.

Detailed topography is not available for either the Northwest or Southwest Quadrants. Consequently, target elevations for reestablished land elevations would be estimated from the depths to natural surface soils that were covered with fill material. These surface soils can generally be recognized by the presence of dark gray topsoil, sulfidic odor, vegetative debris, or roots and rhizomes. In addition, adjoining lands can be inspected for landscape feature that could extend into or across the areas to be restored.

TABLE 5D-5. KEY ENVIRONMENTAL PARAMETERS IN FRESHWATER WETLANDS

Parameter	Comment
Physical	
Hydroperiod	Hydroperiod refers to the amount, length, and a seasonal timing of inundation or soil saturation. It is the single most significant determinant of wetland vegetation within an ecoregion. Brinson (1993a) uses hydrologic variables and geomorphology alone to infer much of the wetland function.
Hydrodynamics	Hydrodynamics refers to patterns of water fluctuation and may be either vertical or unidirectional horizontal in freshwater wetlands. These patterns control the potential directions of material cycling (import/export within biotic zone vs. cycling the same materials into and out of the biotic zone).
Water source	Trapping efficiency for nutrients is related to the residence time of the wetland, which is controlled by wetland volume and water inflow and outflow rates. Surface water sources have substantially more potential for nutrient inputs than groundwater sources in most cases.

Flow velocity	Higher duration of contact between flowing water and vegetation maximizes sediment trapping and production export.
Land surface elevation	The interaction of hydroperiod and land surface controls the soil moisture regime, which also influences the pattern of soil aeration through the year. Most terrestrial plants are intolerant of continuously depleted soil oxygen; the length of time or season in which this is tolerated is a major control on terrestrial wetland vegetation.
Substrate type	Fine-grained mineral soils and peats are less permeable than coarser-grained substrates, thereby allowing surface water to be maintained.
Proportion of open water habitat	Open water is required to support fishes.
Chemical	
Nutrient availability	Few wetlands, except bogs and some unvegetated wetlands, are nutrient deficient; only bogs are likely to be maintained in this state over successional time. Excess nutrient shifts aquatic bed wetlands toward algae and results in depletion of dissolved oxygen in open water habitats.
Dissolved oxygen within open water habitat	Dissolved oxygen levels will exert significant control on the presence or absence of aquatic fauna.
pH	Soil pH (or salinity for alkaline environments) influences the distribution of plant species at the extremes (acid soils in northern climates, alkaline soils in arid climates).
Biological	
Structural diversity (eg., vegetative form richness, interspersions of vegetation and water)	Structural diversity (from abiotic or biotic means) is a necessary, though not sufficient, requirement for community diversity at the next higher level: topographic or substrate diversity gives rise to plant/invertebrate diversity, plant/invertebrate diversity gives rise to avian/mammal/fisheries diversity, and so on. Structure can be restored.

TABLE 5D-5. (Cont.)

Parameter	Comment
Disturbance	
Food frequency	Floods control the hydroperiod/soil moisture/soil aeration regime and also influences the amount and type of allocthonous inputs (nutrients, sediment).
Fire frequency	Fire is the only disturbance known to alter peatlands, allowing more minerotrophic forms to become established. Fire also can alter successional patterns in emergent, forested, and shrub wetlands.
Change in degree of inundation	A change in inundation can happen catastrophically due to landsliding, volcanism, erosion (eg., natural or anthropogenic drainage), or other biotic activity (eg., beavers, small dam construction). See hydroperiod above for implications.

Landscape

Landscape position
(eg., relative to drainage
divide, and relative to
inflows and outflows;
1993a)

Landscape position can influence the amount, timing, and rate of inputs and outputs. Wetlands near drainage divides have relatively small contributing areas that limit the flux of inputs and outputs. Their hydroperiods are related to flashy flooding regimes if connected to surface water or minimal but rapid fluctuations if supplied only by Brinson groundwater. Wetlands low in the drainage have higher potential for material inputs and outputs and water fluctuations related to longer, slower rises in the water table, regardless of water source. Flood flow attenuation peaks at a wetland area to watershed area ratio of 5 percent.

Type, quality, and
quantity of wetlands
present in target and
adjacent watersheds

Target type of wetland to be restored should complement existing wetlands.

Fill material that had been placed along ditches or ponds would be pushed back into those excavations. Such areas would be back-filled in the uppermost points first, so that water in those areas would be pushed down-slope to facilitate suitable compaction of the reintroduced soil. Where necessary, pooled water would be pumped from the excavations during this process. Ditches that were excavated to expand pre-existing drainage ditches would be filled to the extent necessary to approximate the dimensions of the original ditches. Surficial soils would be pushed by a low-impact (wide-track) bulldozer or excavated with a smooth-edge trackhoe bucket. Most areas that were re-contoured contain relatively sandy soils and rutting by earth-moving equipment would not be a severe problem except during periods of high rainfall. The depth of the cut would be monitored throughout the soil removal process, to minimize removal of the original ground surface soils and root mat.

In areas that contain excess material (*ie.*, soil that was hauled from other parts of the properties), the pushed-up soil would be loaded into dump trucks and placed in excavated sites that otherwise would lack sufficient material to restore the wetlands to pre-impact elevations.

As the target elevations are being reestablished within the impacted wetlands, an attempt would be made to place a topsoil surface layer in areas that are found to contain insufficient organic surface soils. Topsoil would be obtained from on-site materials wherever practicable. Off-site sources of topsoil could be used as necessary to provide at least 4 inches of organic surface soil, but would have to be of the same or similar type of soils as exist on the restoration sites.

Restored areas that have been compacted by earth-moving equipment would be de-compacted by discing the soil to a depth of at least 12 inches (30 cm). This would enhance soil water retention and oxygenation, and would prevent ponding/rutting.

Wetland Re-Vegetation

Wetlands in both the north and south properties are characterized by relatively sparse tree cover, including slash pine (*Pinus elliottii*), sweetbay (*Magnolia virginiana*), red maple (*Acer rubrum*), cypress (*Taxodium ascendens*), swamp tupelo (*Nyssa biflora*), and black gum (*Nyssa sylvatica*). Slash pines dominate most of the wetlands that adjoin impacted areas and occur at densities that vary widely across the two properties, but may average 100 trees per acre where logging has not occurred. Bays, gums, and cypress are present in somewhat wetter zones scattered through the sites and appear to have a combined density of less than 20 trees per acre in wetlands that surround the recently impacted wetlands.

Sub-canopy species are important in these pine-dominated wetlands largely due to historic fire suppression. The principal woody species in the mid-story include small slash pine and other trees, green titi (*Cyrilla racemiflora*), gallberry (*Ilex glabra*), bay-gall holly (*Ilex coriacea*), and black titi (*Cliftonia monophylla*).

Ground cover species in the pine wetlands include a wide variety of herbaceous and grass species, including pitcher plants (*Sarracenia* spp.), redroot (*Lachnanthes caroliniana*), meadow beauty (*Rhexia* spp.), weak rush (*Juncus debilis*), spikerush (*Eleocharis* spp.), sedges (*Carex* spp.), and numerous other species. Most of the species found in the affected areas are classified as facultative wetland forms, which can occur in habitats that range from wetland to upland. Obligate wetland species (eg., pitcher plants) are associated with habitats that are nearly always saturated or flooded, and occur primarily in depressions and shallow drains.

Generally, the types of wetlands that have been altered exhibit a high level of natural re-colonization after natural land elevations have been reestablished. This is especially true where the native root mat and topsoil layer has not been removed or severely damaged, and can be re-

exposed by removing overlying soil. Most of the areas that would be restored in the Northwest and Southwest Quadrants still appear to contain these surface soil components, and should exhibit good re-growth of ground cover and shrub species.

Should recruitment of desirable native plant species be deemed too slow or inadequate to meet success criteria native pine savannah graminoid and herbaceous plant species' seeds would be collected from undisturbed on-site areas in the properties, with the intention of seeding the restored areas. Collection efforts would occur in fall and would focus on key wet pine savannah species identified in the two properties. Enough clean, weed-free seed would be collected and applied to meet or exceed or exceed a rate of 15 lbs. per acre.

Most hardwood tree species are less likely to become reestablished through seed germination after natural grades have been established, while slash pine and cypress seeds may germinate readily and seedlings of these species can be early colonizers of disturbed wet flatwoods. Re-planting of newly restored wetlands would focus on the following species: black gum, sweetbay, red maple, and cypress. Slash pine would not be planted initially, but would be planted if natural colonization of pine seedlings were not to occur within about one year of completion of reestablishing natural grades. Tree transplants would be at least 3 feet tall with a main stem caliper of at least 0.25 inch. Approximately 100 trees would be planted per acre, on average, including roughly equal proportions of the four target species. Planting would be performed during the period of November-March when the transplants are dormant. Bareroot transplants would be used for black gum, red maple, and cypress but are not available for sweetbay; that species would be obtained as 1-gallon containerized stock. The transplanted trees would be arranged according to the natural landscape; *ie.*, species such as cypress would be placed in shallow swales/drains while black gum would be placed in sandier flats. Each transplant would be tagged with a bright plastic ribbon for easy recognition.

Exotic Specie Control

Chinese tallow trees (*Triadica sebiferum*) have become established in areas that were altered many years ago by road building, gas well operations, and silviculture operations. This exotic invasive species can be very aggressive and must be controlled to prevent further spreading.

Cogongrass (*Imperata cylindrica*) also has been introduced in these disturbed areas but is poorly adapted to wetland habitats and is unlikely to encroach upon restored wetlands areas. Nonetheless, it would be important to attempt to control this species as well. Approved herbicides would be applied as needed to reduce the numbers/aerial coverage of both exotic species.

CRITERIA FOR SUCCESS

The objective of this restoration plan is to reestablish pine-dominated wetlands in areas that have been altered by recent clearing, and excavation, and/or re-contouring. The extent to which the restoration effort attains this goal would be assessed on the basis of the following criteria for success:

- At least 85% of tree transplants survive at least 12 months after planting and at least 40 native wetland trees per acre (excluding pines) are present at the end of the 5-year monitoring period.
- A pine tree density of 50 to 100 trees per acre has been achieved by the end of the 5-year monitoring period.
- Ground cover of characteristic wetland herbaceous and graminoid species is at least 50% of the cover in adjoining wetlands, measured as percent cover, at the end of the 5th year. Cypress/swamp tupelo drains will not be required to meet the ground cover criterion.
- Exotic invasive plants represent no more than 1% of the vegetation measured as percent cover, at the end of the 5th year.
- Drainage patterns and land elevations conform closely to pre-impact conditions, based on the characteristics of adjoining habitats.

MONITORING

Qualitative monitoring of the restoration areas will be conducted quarterly for the first year following completion of restoration implementation. A pedestrian survey of the site at regular intervals would serve to identify any noticeable failures in the restored areas such as erosion, subsidence, ponding, exotic species invasion, tree mortality and the like during the critical first year of establishment. This will allow for sufficient reaction time on the part of the Project Manager to implement some type of adaptive management strategy. Qualitative monitoring will

continue on a bi-annual basis for years two through five, with one of these events occurring concurrently with the quantitative monitoring outlined below.

An annual quantitative monitoring of the site will be conducted after the first year of establishment and for the four years following to assess the site's trajectory toward restoration success. All wetland sites will be inspected for groundcover species recruitment and establishment, natural re-colonization by tree and shrub species, and planted tree success. Monitoring transects or study plots will be established at regular intervals across the restored areas. The number and species of trees and shrubs, both planted and recruited, will be tallied in these transects/plots. The percent cover of dominant ground cover species will be quantified by recording their occurrence along the transects or in the plots. The observations will be reported.

- Density (trees per acre) of planted trees to assess planted tree mortality;
- Percent cover and diversity of native herbaceous species;
- Density (trees per acre) of native tree species recruited to the restoration site;
- Density (stems per acre) of native shrub species recruited to the site;
- Percent cover of exotic invasive species;
- Undesirable drainage patterns or unsuitable hydrologic conditions; and
- Any other conditions that could affect restoration success.

The results of each survey will be provided to the responsible Federal and Mississippi State agencies.

ADAPTIVE MANAGEMENT

Although the restoration measures described above are expected to result in successful reestablishment of wetland habitat, there are likely to be some areas that do not fully meet the success criteria. Generally, lack of success results from problems with land elevations and drainage or hydroperiod. For example, refilled ditches may exhibit unusual settlement or compaction and they may have overly prolonged ponding that prevents growth of groundcover or most wet pinewoods tree species. Other locations may remain slightly higher than intended, resulting in better drainage and shorter periods of flooding or saturation. Another common

problem is transplant damage by herbivores such as deer and beaver. In addition, some loss of bareroot transplants will occur regardless of site suitability.

When these events occur, the Project Manager must be able to react quickly and devise some type of adaptive management plan that corrects the problem and sets the site back on an appropriate trajectory to meet the success criteria. Each monitoring survey report would identify any issues that could affect restoration success, and would suggest recommended remedial measures that should correct those problems. In the event that substantial problems were observed (as opposed to routine issues such as incidental tree mortalities), potential remedial actions would be discussed with the cognizant agencies and a plan of action would be devised that addressed agency concerns and proposed corrective measures. For example, areas that exhibited excessive subsidence may require additional fill material and re-planting. Areas that have very poor ground cover growth may require additional seeding, while eradication of exotic invasive species such as Chinese tallow tree could involve herbicide application or manual removal. Agency concurrence with such actions would be obtained before they were implemented.

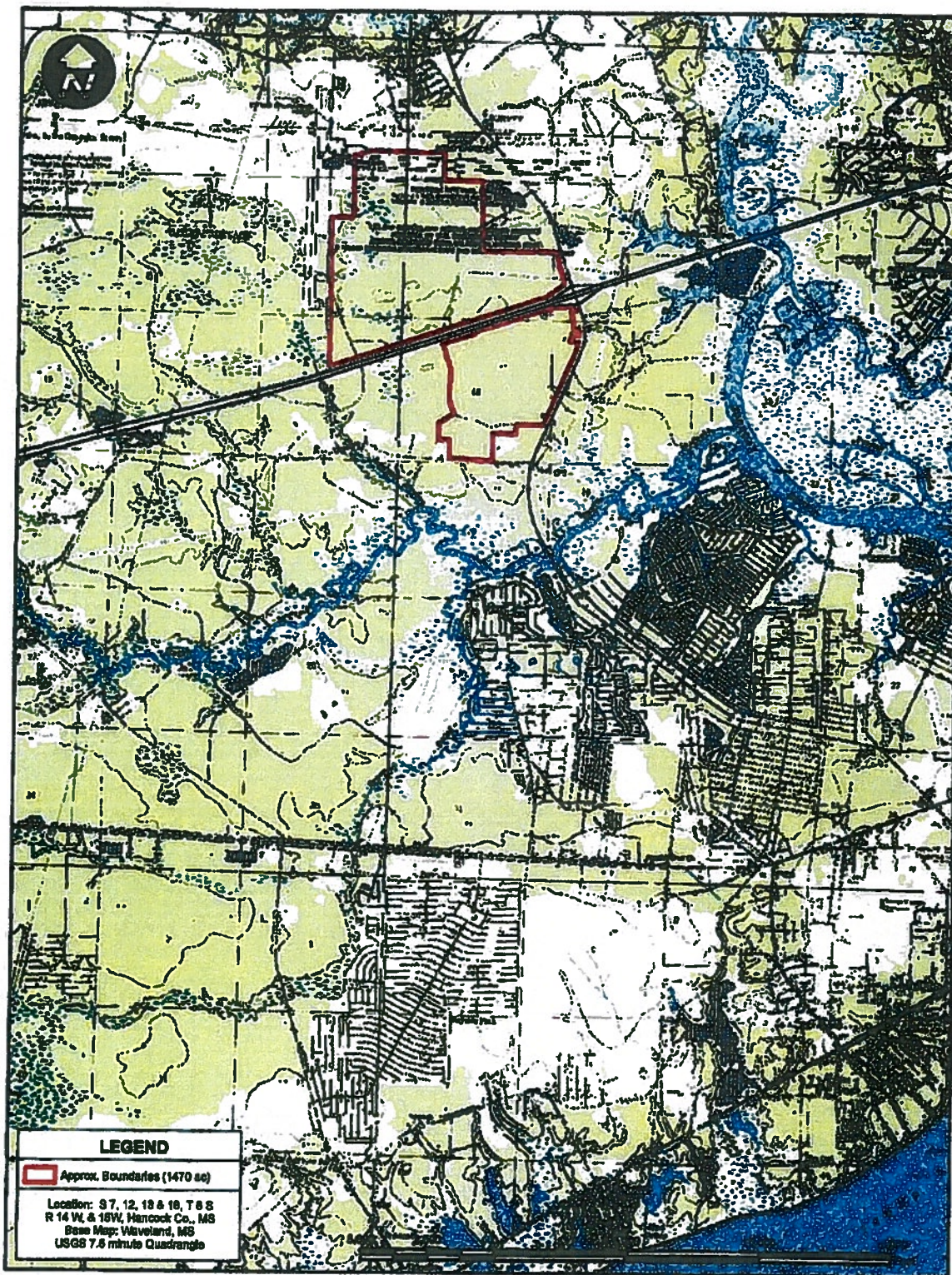


FIGURE 1. Location of the Stennis Lands, LLC property in Hancock County, MS.

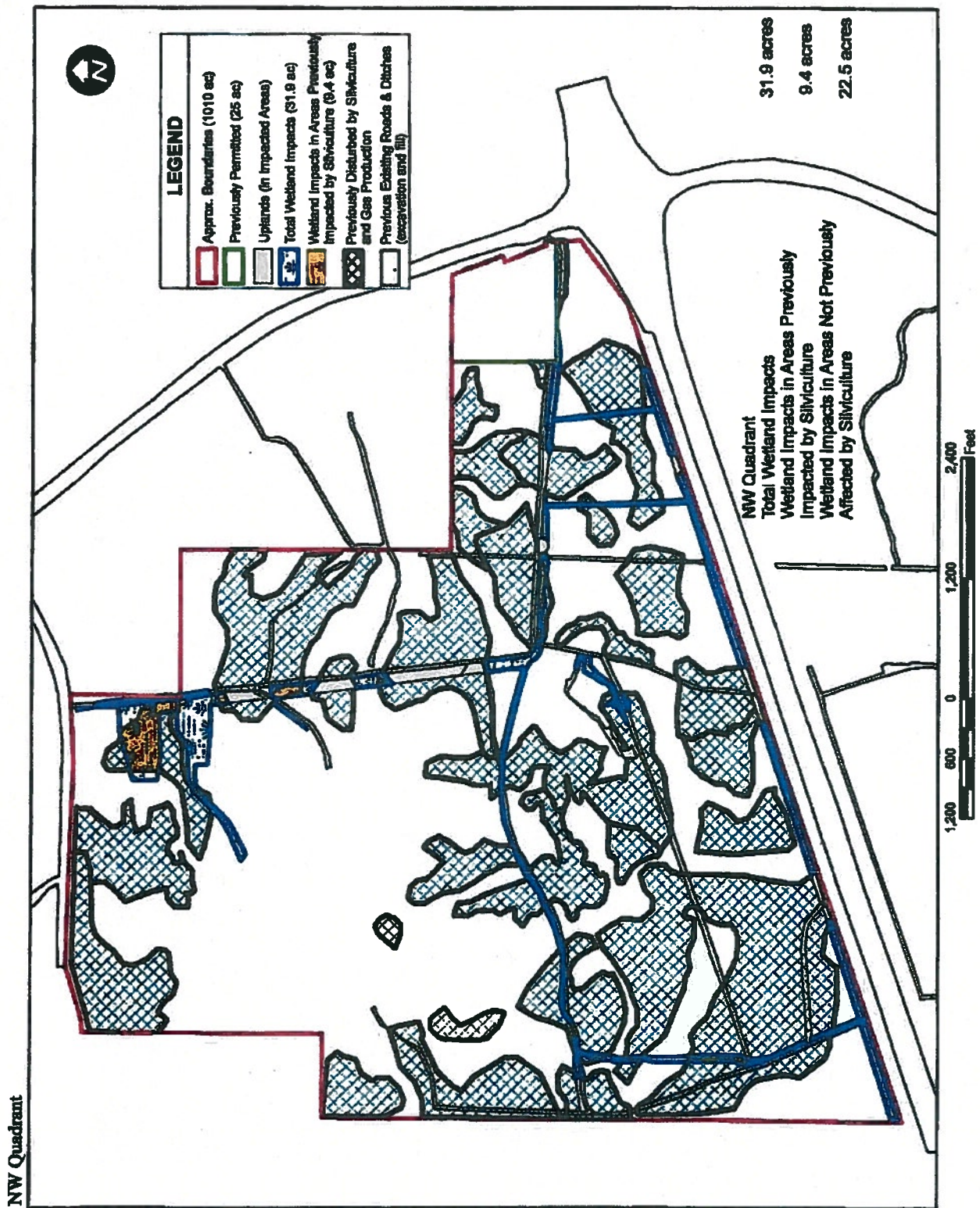


FIGURE 2. Northwest Quadrant wetland disturbance areas, silviculture zones, and historic roads and ditches.

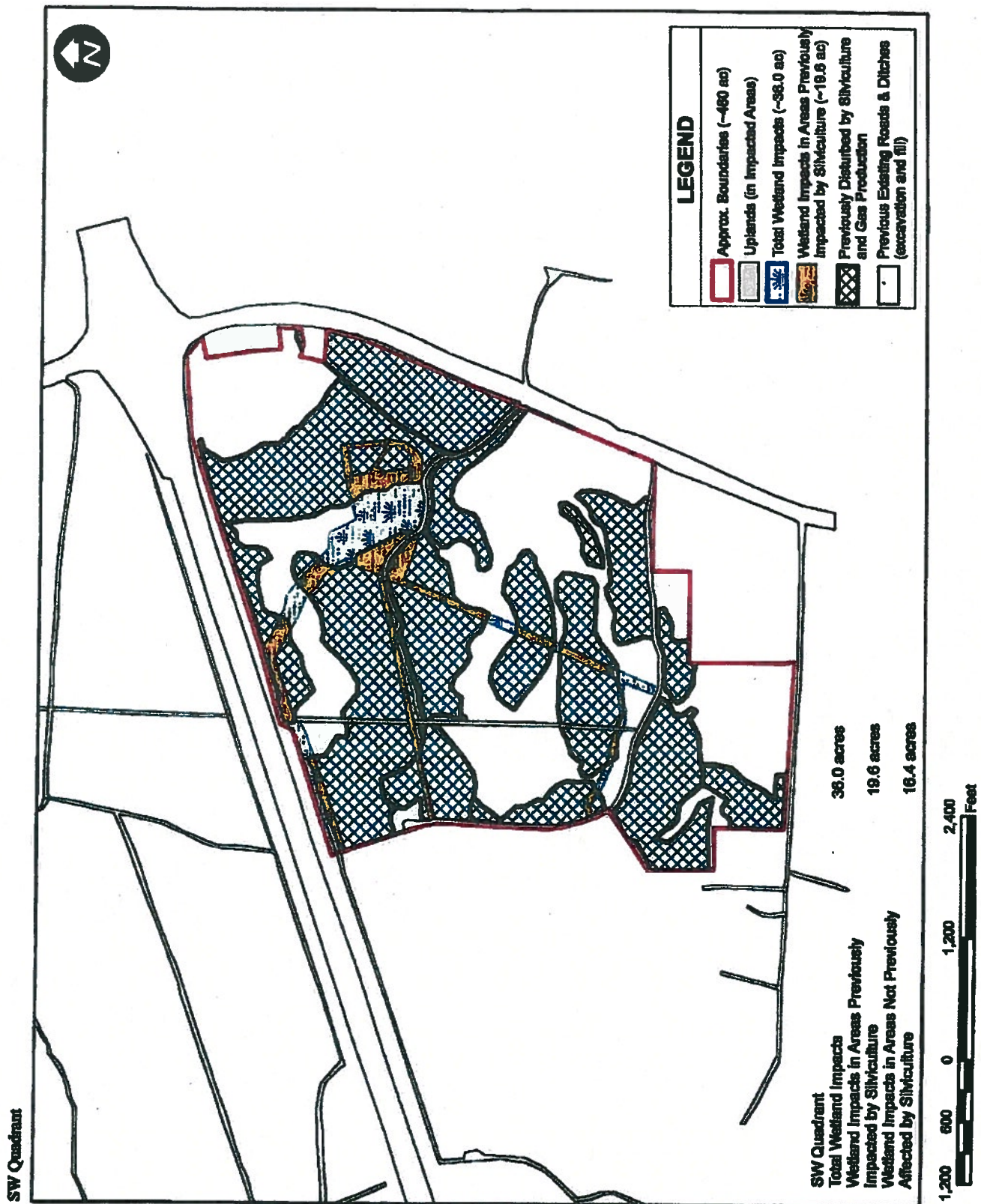


FIGURE 3. Southwest Quadrant wetland disturbance area, silviculture zones, and historic roads and ditches.

